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The Adaptive Power of the Present:

Perceptions of Past, Present, and Future Life Satisfaction Across the Life Span

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Abstract

Despite remarkable stability of life satisfaction across the life span, it may be adaptive to perceive change in life satisfaction. We shed new light on this topic with data from 766 individuals from three age groups and past, present, and future life satisfaction perceptions across the life span. On average, participants were most satisfied with their current life. When looking back, satisfaction increased from past to present, and when looking ahead, satisfaction decreased into the future. Trajectories were best fitted with a curvilinear growth model. Neuroticism and extraversion predicted the level of trajectories, but none of the Big Five predicted the slope. We conclude that humans have an adaptive capacity to perceive the present life as being the best possible.

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Key words: Life satisfaction; life span; perceived trajectory; past, present, and future perceptions; Big Five personality traits; latent growth modeling

1. Introduction

To understand how individuals perceive their lives and how this perception changes subjectively when looking back and forward across their entire life is a key to investigate the potential adaptive capacity of self-perception for human functioning. In this article, we focus on subjective perceptions of life satisfaction trajectories, that is, how individuals rate their past, present, and future life satisfaction across their entire life span. This notion of looking back to evaluate one's past and looking ahead to envision one's future entails intraindividual temporal comparisons that trace back to propositions of implicit theories to reconstruct the past as a function of the present self (Ross, 1989), temporal comparison processes (e.g., Albert, 1977; Wilson & Ross, 2001), possible (past and future) selves (e.g., Markus & Nurius, 1986), self-deception (Robinson & Ryff, 1999), and affective forecasting (Wilson & Gilbert, 2005). The common ground of these approaches is that the self operates as a construction of the past, the present, and the future with self-evaluative processes to compare the present with the past life (i.e., perceived improvement vs. impairment) and the present with the future life (i.e., anticipated improvement vs. impairment). Such subjective perceptions lie at the core of the present study to identify perceived trajectories of past, present, and future life satisfaction across the life span in young, middle-aged, and older adults. In doing so, we shed new light on previous studies that found life satisfaction to be generally rated far above the neutral point (e.g., Diener, 2000) and remarkably stable across adulthood both in cross-sectional (e.g., Diener & Suh, 1998; Hamarat et al., 2002) and longitudinal studies (e.g., Baird, Lucas, & Donnellan, 2010; Mroczek & Spiro, 2005), with significant decline only in old age (e.g., Gerstorf et al., 2008). Thus, despite remarkable stability in actual trajectories of life satisfaction, subjective perceptions of life satisfaction trajectories may vary across the life span and provide the ground for a human adaptive capacity to maintain a consistent view of the self (Jones, 1973).

1.1 A Life-Span Developmental Perspective

Individuals generally have implicit theories of developmental trajectories that mirror assumptions of traditional life-span psychology with an increase in skills and competencies throughout childhood, adolescence, and young adulthood, followed by stability in adulthood, and a decrease in old age. This perspective is often portrayed with the picture of an inverted u-shaped life stairs. Contemporary life-span developmental psychology challenges this overly simplified view on human development and understands development as a dynamic process of intertwined increases and decreases, i.e., gains and losses. Thus, development is multidimensional and multidirectional as different domains of human functioning follow different developmental pathways (Baltes, 1987). At any given time across the life span human development is an expression of the relation between developmental gains and losses, and this relation is likely to undergo age-related changes across the life span: especially in the second half of life there is a shift in the proportion between gains and losses resulting in the losses outweighing the gains in late adulthood (Baltes, 1987, 1997).

Life-span developmental perspectives propose that humans have an inherent adaptive capacity to compensate for negative outcomes and constraints across the life span (e.g., Baltes, 1997; Baltes & Baltes, 1990; Brandtstädter & Greve, 1994; Carstensen, 1995; Carstensen, Isaacowitz, & Charles, 1999). More specifically, the assumption of adaptive capacity traces back to Baltes' (1987) seminal contribution on the dynamic interplay between growth (i.e., gains) and decline (i.e., losses) as a feature of any developmental progression that takes place at any time point during the life span. The process of selective optimization with compensation has been used to refer to humans' inherent adaptive capacity to apply selective, optimizing, and compensatory resources to master difficulties or deficits throughout the life span (Baltes, 1987). As people age, there is a shift in the allocation of resources from

an orientation on growth in younger adulthood to a focus on maintenance and regulation of loss in older adulthood (e.g., Baltes, 1997).

Another life-span approach—socioemotional selectivity theory—offers a framework that focuses on the individual perception of time left in life (Carstensen, 1995; Carstensen et al., 1999). According to this theory, the awareness of transience becomes more salient with increasing age and leads older people to more consciously look back on their lives in order to successfully integrate their past into their present self (see also Erikson, 1980), and to accept that further improvement in the future may be unlikely to occur. The theory suggests that people adjust their perceptions of their current life to adapt to different life goals and that life goals become more relational and emotional as people age (Carstensen, 1995). In addition, with increasing age, people show better emotion regulation (Carstensen et al., 1999) and are more likely to recall positive than negative information from their past (e.g., Charles, Mather, & Carstensen, 2003).

Thus, arguing from a life-span developmental perspective, there is a shifting focus from a rather unlimited to a more limited time perspective from young to older age (Carstensen et al., 1999). Moreover, there is a shift in resource allocation, given that childhood and young adulthood are typically perceived as a time of continued growth, adulthood as a time of maintenance, and older adulthood as a time of avoidance of age-related losses (e.g., Baltes, 1997). Together, these theories of life-span development describe processes that are highly adaptive for human functioning because individuals generally strive for self-improvement (Ross & Wilson, 2000; Sedikides & Gregg, 2008; Wilson & Ross, 2001) and self-consistency (Jones, 1973). In addition, because these life-span approaches affect individuals' implicit theories of developmental trajectories, young, middle-aged, and older adults might report different perceptions of past, present, and future life satisfaction across the life span.

1.2 Empirical Evidence on Perceived Trajectories of Past, Present, and Future Life Satisfaction

Some previous studies embraced the challenge to analyze people's adaptive capacity in this regard. For instance, in one study young, middle-aged, and older adults were asked to rate their past, present, and future well-being (Ryff, 1991). Young and middle-aged adults perceived lower well-being in their past compared to the present, whereas well-being perceptions of older adults were stable. When looking into the future, young and middle-aged adults expected continued gains in the years ahead, whereas older adults expected a decline in their future well-being (Ryff, 1991). In a similar vein, another study investigated ratings of past (i.e., 10 years ago), present, and future (i.e., 10 years ahead) subjective well-being (Staudinger, Bluck, & Herzberg, 2003). Young adults rated past subjective well-being lower and future subjective well-being higher than present subjective well-being. Middle-aged adults showed no difference in their ratings of past and present well-being, but expected an increase in the future. Older adults in turn, perceived past well-being to be higher than present, and present well-being higher than anticipated well-being in the future (Staudinger et al., 2003). These results were confirmed and extended in a longitudinal study where little change in actual life satisfaction trajectories over a 10-year period was found, but substantial age differences in anticipated change were found. More specifically, young adults expected an increase in their future life satisfaction, whereas older adults expected a decline (Lachman, Röcke, Rosnick, & Ryff, 2008). In another longitudinal study with a community sample of young adults, participants were asked to rate their past (i.e., 1 year ago), present, and future (i.e., 5 years ahead) life satisfaction at two measurement occasions five years apart. Results revealed an upward life satisfaction trajectory in young adulthood, that is life satisfaction in the past was rated lower than present, and present lower than future life satisfaction at both time points (Busseri, Choma, & Sadava, 2009). Very recently, a study used national

household panel data from Germany (including perceptions of present and future life satisfaction, i.e., 5 years ahead) and found that younger adults expected life satisfaction to be higher in the future, whereas middle-aged adults and older adults expected lower future life satisfaction (Lang, Weiss, Gerstorf, & Wagner, 2013).

To sum up, theoretical propositions of life-span development and previous research suggest age-differential effects in perceived trajectories of past and future life satisfaction: Young adults generally recall improvement from the past to the present and expect further improvement in the future, middle-aged adults recall stable or increasing life satisfaction from the past to the present and expect further increase in the future, and older adults recall stable or decreasing life satisfaction from the past to the present and expect further decrease in the future. However, all of these studies focused on a limited time span of a maximum of ten years to recall past and anticipate future life satisfaction (i.e., 1, 5, or 10 years ago for past life satisfaction, and 5 or 10 years ahead for future life satisfaction, respectively), i.e., covering, at most, a quarter of the average life span of people living nowadays. Due to this limitation, previous studies could not identify the subjectively perceived peak of the life-span trajectory and, consequently, could not test whether individuals tend to perceive the present as the best time of their life. For example, it is unknown whether young adults, when asked to look into the future more than 10 years, would expect a decrease in later life stages. Hence, in order to investigate humans' adaptive capacity within a life-span framework, perceptions of the past and the future should comprise the entire life span.

1.3 The Present Study

The present study adopts the idea of a human adaptive capacity in an attempt to reinterpret the predominantly stable high levels of subjective well-being across the adult life span. We believe that individuals possess an adaptive self-regulatory capacity to perceive oneself at the current time in life in the best psychological situation in order to maintain a

self-consistent view of oneself (Jones, 1973). This is similar to what Quoidbach, Gilbert, and Wilson (2013) recently called "end of history illusion". They found that individuals of all ages have a general misconception about future changes and believe that although they have changed a lot in the past, there is not much more change to expect in the future. The authors conclude that individuals in young, middle-aged, and older adulthood think that their present self is the person they will remain for the rest of their lives (Quoidbach et al., 2013). In order to test the assumption of adaptive capacity, we conducted a cross-sectional study of past, present, and future life satisfaction perceptions covering the entire life span with participants from three age groups—young, middle-aged, and older adulthood. Since the past and future life satisfaction ratings used in the present study cover the entire life span, we substantially expand previous studies, which focused on life satisfaction some years in the past and future, respectively (e.g., Busseri et al., 2009; Lang et al., 2013; Lachman et al., 2008; Ryff, 1991; Staudinger et al., 2003). Moreover, the current study includes the Big Five personality traits to examine whether perceptions of past, present, and future life satisfaction across the life span are affected by personality traits.

The aim of the study was threefold: First, we examine perceptions of life satisfaction trajectories across the life span by using past, present, and future ratings of life satisfaction. We hypothesize that ratings of past, present, and future life satisfaction across the life span can be captured by latent growth models and that the model-implied trajectory is curvilinear. Second, we hypothesize that for all age groups the trajectories follow an inverted u-curve, but that the trajectories reveal the self-regulatory adaptive capacity in different life decades according to the respective age group and thus peak at different ages, specifically, around the actual age of the participants. Third, we study potential moderating effects of personality traits on the level and shape of the trajectory, that is, we analyze whether perceived life satisfaction trajectories vary as a function of personality traits in young, middle-aged, and

older adults. Despite abundant evidence on the association between personality traits and subjective well-being (see, e.g., the meta-analysis by Steel, Schmidt, & Shultz, 2008), research on how personality traits may affect people's perceptions of life satisfaction is scarce. It is possible that personality traits such as neuroticism, extraversion, and openness influence the way how people perceive the life-span trajectory of their life satisfaction; however, if the Big Five personality traits do not significantly moderate the trajectory, then this would suggest that the average shape of the perceived trajectory holds regardless of the individual's personality, which would increase the generalizability of the findings.

2. Method

2.1 Participants

The sample consisted of 766 participants who lived in urban and suburban regions in the German-speaking part of Switzerland and who agreed to participate after having been sampled randomly from address lists obtained from local authorities. Participants were paid 20 Swiss francs (approximately 20 US$) to recompense their time and effort. Individuals from three age groups were recruited for the study: young adults (n = 256; age range: 24-29; M = 26.0 years), middle-aged adults (n = 244; age range: 49-54; M = 50.5 years), and older adults (n = 266; age range = 74-79; M = 75.7 years). Sex distribution was similar across age groups (young adults: 57% women; middle-aged adults: 54% women; older adults: 45% women). Level of education was as follows: Of the young adults, 2% reported having completed mandatory school (i.e., nine years), 32% vocational school, 36% high school, and 30% reported having a college or university degree. Of the middle-aged adults, 4% reported having completed mandatory school, 49% vocational school, 5% high school, and 42% reported having a college or university degree. Of the older adults, 11% reported having completed mandatory school, 56% vocational school, 4% high school, and 29% reported

having a college or university degree. The majority of participants had lived in Switzerland since birth (young adults: 91%; middle-aged: 84%; older adults: 85%).

2.2 Measures

Life satisfaction. Each participant rated his or her life satisfaction with regard to nine life decades (*"How satisfied were/are/will you (be) at age 5, 15, 25, 35, 45, 55, 65, 75, and 85?"*) on an 11-point scale ranging from 1 (*completely dissatisfied*) to 11 (*completely satisfied*). Thus, depending on their age, participants reported their perception of their past, present, or future life satisfaction. These ratings allowed us to depict the perceived life satisfaction trajectory across the life span separately for the three age groups (for a similar approach see Ferring & Filipp, 1997; Krueger & Heckhausen, 1993).

Personality traits. Participants' personality was measured with a 30-item adjective-based inventory. The adjectives used to cover the Big Five personality traits were drawn from Goldberg's (1992) markers. Each personality trait was assessed with six items and each item was composed of two same-meaning adjectives. Example items are "fearful, nervous" for neuroticism, "sociable, talkative" for extraversion, "creative, curious" for openness, "kind, agreeable" for agreeableness, and "thorough, dedicated" for conscientiousness (for a similar measure see Gosling, Rentfrow, & Swann, 2003). All items were rated on a five-point scale ranging from 1 (*not at all)* to 5 (*completely*). Internal consistencies were .66 for neuroticism, .79 for extraversion, .69 for openness, .62 for agreeableness, and .71 for conscientiousness, respectively.

2.3 Statistical Analyses

Statistical analyses were based on multi-group latent growth curve models (Preacher, Wichman, MacCallum, & Briggs, 2008) using the AMOS program (Arbuckle, 2007). Although latent growth curves are typically used for longitudinal data from multiple measurement occasions, we applied this method to cross-sectional data and treated

participants' decade-specific ratings of past, present, and future life satisfaction across the life span as if they were assessed longitudinally (i.e., as manifest indicators of latent intercept and slope factors). To the best of our knowledge, only one study has previously used latent growth curve modeling for this type of data (Busseri et al., 2009). The application of this approach allows to model participants' appraisals of past, present, and future life satisfaction covering the entire life span and is therefore ideally suited to investigate perceived trajectories of life satisfaction across the life span. Table 1 provides descriptive statistics of the variables used in the models for each age group. Model fit was assessed with the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). RMSEA values lower than .08 and CFI values above .90 were considered as good model fit indices (Byrne, 2001). For nested model comparisons and multi-group analyses, we used the χ^2-difference test.

3. Results

The first aim was to examine perceived trajectories of life satisfaction across the life span in young, middle-aged, and older adults. Figure 1 displays the *observed mean-level trajectories* of past, present, and future life satisfaction from childhood to old age separately for young, middle-aged, and older adults (see also Table 1). The life satisfaction ratings are all relatively high and above the neutral point, which is in line with previous work demonstrating that well-being scores are usually in the positive range (e.g., Diener, 2000). As can be seen, life satisfaction perceptions across the life span followed a similar trajectory in each of the three age groups, beginning high in childhood with a steep decline during adolescence, followed by a continuous increase up to approximately the current life decade of respondents, and finally a steady decrease in future life satisfaction. Young and older adults expected their life satisfaction to peak shortly in the future or past, respectively: Young adults anticipated some further increase in the next 10 years before the steady decrease was

expected to begin and to continue until late adulthood. Older adults in turn, reported their highest life satisfaction in their previous life decade (cf. means in Table 1).[1] The correlations between current life satisfaction and perceptions of past and future life satisfaction are reported in Table 2, separately for the three age groups. As can be seen, all correlations were significant or marginally significant for each age group and were somewhat stronger for the most proximal past and future life decades (i.e., 10 years back and 10 years ahead, respectively). Nevertheless, even at the greatest possible temporal distance, that is current life satisfaction in older adulthood with perception of past life satisfaction in childhood (at age 5), the correlation was significant (i.e., $r = .16$, $p = .01$). Thus, perception of current life satisfaction seems to be insofar adaptive as it colors perceptions of past and future life satisfaction in each age group.

We then estimated a model with an intercept, and subsequent models with linear, quadratic, and cubic latent growth factors in order to identify the best fitting model of the perceived life satisfaction trajectories across the life span in the three age groups. The models were specified as follows: The intercept factor loadings were fixed to 1. The slope factor loadings were centered at age 45, with a one-unit increase corresponding to a 10-year increase in age. Thus, the linear slope loadings were fixed at -4, -3, -2, -1, 0, 1, 2, 3, and 4 for life satisfaction ratings for ages 5, 15, 25, 35, 45, 55, 65, 75, and 85, respectively. The quadratic and cubic slope loadings were fixed at squared and cubed values, respectively. When we included the childhood rating into the model, the results were non-admissible for two of the three age groups due to negative residual variances for the rating at age 5. Also, inspection of the model-implied average trajectories suggested that the childhood rating could not be captured in a coherent life span trajectory. Very likely, the reason is that the curvature of the trajectory between age 5 and age 15, as indicated in Figure 1, cannot be modeled when only one assessment is available for childhood. We therefore decided to omit the rating at age

5 from the latent growth models reported in this article, but kept the respective rating in the descriptive results reported in Table 1 and Figure 1. When we excluded the rating at age 5, all models converged and resulted in admissible solutions.

Results from multi-group analyses revealed that the cubic growth model provided the best fit to the data (see Table 3 for fit estimates of the models tested). Nested model comparisons revealed that adding a linear slope factor significantly improved model fit when compared to the intercept-only model ($\Delta\chi^2$ [9] = 500.9, $p < .001$). Similarly, adding a quadratic slope factor significantly improved model fit when compared to the linear model ($\Delta\chi^2$ [12] = 551.6, $p < .001$). And finally, adding a cubic slope factor significantly improved model fit when compared to the quadratic model ($\Delta\chi^2$ [15] = 141.8, $p < .001$). These results support the assumption that a cubic trajectory of life satisfaction perceptions across the life span is tenable. Figure 2 shows the average, *model-implied trajectories* of past, present, and future life satisfaction from adolescence (15 years) to old age (85 years) for young, middle-aged, and older adults. Although the trajectories shown in Figure 2 resemble quadratic curves, they are in fact cubic. For example, for the group of older adults, the cubic factor results in a lower increase in young adulthood and a stronger decrease in old age than would be explained by a quadratic trajectory. The cubic factor is important to fit the trajectories more closely to the data (as indicated by the better fit of the cubic model).

The means and variances of all growth factors in the cubic model were significant, with the exception of the mean of the linear slope in the group of young adults. In each age group, perceptions of life satisfaction increased from adolescence until approximately the current life decade of respondents and then decreased into old age; that is, life satisfaction was expected to reach a peak at about age 35 for young adults, at about age 50 for middle-aged adults, and at about age 65 for older adults. In young and middle-aged adults, the increase from adolescence to age 35 and to age 50, respectively, corresponded to about one

standard deviation (d = 1.01 for young adults and d = 0.99 for middle-aged adults), and in the older adults group there was a more than two-third standard deviation increase from adolescence to age 65 (d = 0.70). After reaching the peak, there was a more than one-half standard deviation decrease in middle-aged adults from age 50 to age 85 (d = -0.58), and an almost two-third standard deviation decrease in young adults from age 35 to age 85 (d = -0.64), and in older adults from age 65 to age 85 (d = -0.61).

Our second aim was to analyze whether the trajectory differed across age groups. As mentioned earlier, although the cubic trajectory had the best fit to the data in all age groups, young, middle-aged, and older adults may nevertheless differ in level and slopes of the trajectory. To address this question, we tested whether the means and variances of the latent intercept and slope factors could be set invariant across age groups without a significant decrease in model fit. The results confirmed the hypothesis that the level and the trajectory differed across age groups: For all possible age group comparisons, equality constraints significantly decreased model fit ($\Delta\chi^2[8]$) = 40.9 for young vs. middle-aged adults; $\Delta\chi^2[8]$ = 65.0 for young vs. older adults; $\Delta\chi^2[8]$ = 46.4 for middle-aged vs. older adults; and $\Delta\chi^2[16]$ = 105.5 for equality constraint across all three age groups; all ps < .001). As can be seen in Figure 2, middle-aged adults started lowest, older adults started highest, and the initial level of life satisfaction for young adults was in between. The slopes of the two younger age groups were steeper, corresponding to the fact that their trajectories peaked earlier than the trajectory of older adults. In contrast, the trajectory of older adults exhibited a flatter increase until reaching the peak at age 65 and a steeper decrease thereafter. Moreover, the peak in the trajectory of older adults reached a higher level as compared to young and middle-aged adults' life satisfaction peak. Even more impressive, young and middle-aged adults' life satisfaction trajectories did not reach the degree of the present life satisfaction rating provided by older adults (see Figures 1 and 2).

Finally, our third aim was to explore the moderating effects of the Big Five personality traits on life satisfaction trajectories and we therefore estimated a conditional latent growth multi-group model (Preacher et al., 2008; see also Bollen & Curran, 2006). Model fit was good ($\chi^2[128] = 372.2$, RMSEA = .05, CFI = .92) and no evidence for age group-specific effects of personality traits on the growth factors emerged: Constraining the effects of personality traits to be invariant across age groups did not significantly decrease model fit ($\Delta\chi^2[40] = 41.3$, $p = .41$). The standardized estimates of the conditional latent growth model with equality constraints across age groups are reported in Table 4. Neuroticism was negatively related to the intercept, extraversion was positively related to the intercept, whereas openness, agreeableness, and conscientiousness were unrelated to the intercept. Moreover, none of the Big Five personality traits had a significant effect on any of the slope factors.

4. Discussion

With regard to the main questions guiding the present study three conclusions can be drawn: First, we were able to model perceived life satisfaction trajectories from adolescence to old age with past, present, and future life satisfaction ratings of young, middle-aged, and older adults. The analyses suggested that a cubic curve had the best fit to the data within a multi-group latent growth model. Thus, we were able to fit the same type of model to perceived life satisfaction ratings across the life span in young, middle-aged, and older adults. More specifically, middle-aged adults were most satisfied with their life at present, and young and older adults were most satisfied either 10 years in the future or in the past, respectively. When looking back, satisfaction increased from the past to the present, and when looking ahead, satisfaction decreased into the future. One consideration may warrant special attention: If we focus only on the proximal past and future life satisfaction perceptions in young, middle-aged, and older adults (i.e., 10 years ago and 10 years ahead), our results

are in line with previous studies that focused on a limited time span to assess past and future life satisfaction perceptions (e.g., Lachman et al., 2008; Staudinger et al., 2003). At the same time, however, our results suggest that this is not yet the whole story and underscore the importance of including perceptions of the entire life span in order to capture individuals' implicit constructions of how life satisfaction evolves from the past into the future.

Second, results from multi-group comparisons revealed age differences in the level and slope factors of the cubic life satisfaction trajectories peaking around the current age of the three age groups. More specifically, the increasing slopes from past to present life satisfaction were steeper for young and middle-aged adults and flatter for older adults. Inversely, the decreasing slopes from present to future life satisfaction were steeper for older adults and flatter for young and middle-aged adults. Interestingly, the rating of older adults' present life satisfaction reached a peak at a level that young and middle-aged adults did not expect to reach in their own future (see Figure 2).

We therefore conclude that humans have an adaptive capacity to perceive their present life as being the best possible, regardless of age. Although young and older adults expected their life satisfaction to peak either shortly in the future or in the past, respectively, we think it is justified to assume that people are most satisfied with their current phase of life, especially because the respective life satisfaction ratings within young and older adults did not significantly differ from each other (cf. Footnote 1). Moreover, young and middle-aged adults did not expect to be as satisfied in their future as older adults were in their present life decade. When it comes to long-term autobiographical memory, previous research speaks for a positivity bias in older adults (Kennedy, Mather, & Carstensen, 2004). Probably due to improved emotion regulation with increasing age, older adults are more likely to recall positive than negative information from their past (e.g., Charles et al., 2003). Our results provide further support for this positivity effect because the older adults in our sample also

show a tendency to rate their past life more positively than it may actually have been. At least this is one possible explanation when comparing older adults' life satisfaction trajectory with young and middle-aged adults' trajectories. For instance, when older adults looked back and evaluated their life at age 50 (i.e., the current life decade of middle-aged adults), they were more satisfied than middle-aged adults were concurrently (see Figures 1 and 2). Another explanation for lower future life satisfaction trajectories in young and middle-aged adults as compared to older adults' past and current appraisals is suggested by research on affective forecasting (Wilson & Gilbert, 2005). This framework claims that appraisals of the future are difficult, typically result in exaggerated evaluations, and that people therefore overestimate the emotional impact of the future (Wilson & Gilbert, 2005). Thus, from this perspective, we can conclude that young and middle-aged adults may rate their future overly negative, at least more negatively than it may actually be. Finally, according to the end of history illusion there might be general misconceptions about future change leading to an underestimation of the magnitude of future change (Quoidbach et al., 2013). Unfortunately, we cannot satisfactorily answer which explanation better accounts for the present data. Very likely, all processes play a relevant role when it comes to past and future well-being appraisals. Alternatively, differences in perceived life satisfaction trajectories might also be due to the fact that participants belong to different birth cohorts. However, our data do not allow to disentangle age from cohort effects.

Third, personality traits were found to significantly influence the intercept, but not the slope of life satisfaction trajectories from adolescence to old age. More specifically, neuroticism and extraversion had an effect on the intercept, whereas openness, agreeableness, and conscientiousness did not. Congruent with previous research, neuroticism was negatively related to the intercept in each age group, thus implying that people high in neuroticism have a lower level of life satisfaction across the life span. Extraversion in turn was positively

related to the intercept, such that higher extraversion is associated with a higher level of life satisfaction. These results underscore well-established evidence that neuroticism and extraversion are important correlates of subjective well-being (Schimmack, Oishi, Furr, & Funder, 2004; Vittersø, 2001; Vittersø & Nilsen, 2002), and additionally expand it to future and past well-being appraisals. The remaining Big Five factors were unrelated to the level of life satisfaction in this sample.

The fact that none of the Big Five traits were substantially related to the slopes of life satisfaction trajectories speaks for the primacy of the adaptive capacity to perceive one's present life as the best possible. We therefore conclude that people construe the trajectory of life satisfaction across the life span independently of their personality traits. However, it is possible that other personality variables that were not examined in the present study affect the slopes of life satisfaction trajectories. For instance, dispositional depression and pessimism might dampen the positivity effect we found. Future studies should therefore continue to integrate personality factors as predictors of perceived change.

The observed life satisfaction trajectories (as shown in Figure 1) reveal a clear drop in life satisfaction during adolescence, which emerges for each age group and only appears due to the inclusion of the childhood rating at age 5. Unfortunately, we had to drop the childhood rating from the latent growth models for methodological reasons. We nevertheless think it is worth interpreting this drop in adolescence. From a perspective that focuses on social representations and implicit theories of human development, people perceive childhood as a life period dedicated to play and with no or minimal responsibility. In contrast, adolescence is remembered as a vivid period in life with many first-time experiences, predominantly of mixed emotional valence. These include growing responsibilities in school and academic achievement, social demands, friendships, first-time romantic experiences, etc. Moreover, adolescence is known as sandwich position between the relatively untroubled childhood and

emerging adulthood with growing expectancy for sustainable decisions imposed by society (e.g., Havighurst, 1948; Steinberg, 2011). Although we cannot address this issue with the current data we are convinced that future research would profit from more fine-grained subjective well-being ratings throughout childhood and adolescence. This would allow a more thorough and differentiated caption of the life satisfaction drop during adolescence, which seems to be insofar universal, as the drop is remembered in young, middle-aged, and older adults.

In the current study, we applied latent growth modeling to cross-sectional ratings of past, present, and future life satisfaction across the life span in young, middle-aged, and older adults. Before coming to a general conclusion, at least three limitations should be acknowledged. First, as mentioned above, age and cohort effects are confounded due to the cross-sectional study design. Thus, age differences regarding level and slopes of the trajectories demand a cautious interpretation. In future research, a longitudinal study design could not only help disentangling age and cohort effects, but could also deepen our understanding of people's perceived life satisfaction trajectories across the life span. A longitudinal study in which perceptions of life satisfaction across the life span were assessed a second time after, e.g., 10 years could address the question of whether people make accurate predictions about their future life satisfaction, by comparing their forecasting perception 10 years ahead, measured at the first occasion, with their actual life satisfaction 10 years later measured at the second occasion (cf. Busseri et al., 2009; Lang et al., 2013). We hypothesize that people do not accurately forecast satisfaction with their future life, but that longitudinal data would show that the perceived peak of the life-span trajectory will always be at about the current age of the assessed individual—thus, the perceived peak of life satisfaction would "move" across the life span as people age.

A second limitation is that the inclusion of age groups covering young, middle-aged, and older adulthood—although reasonable from a life-span perspective,—could have been broadened with an age group of adolescents. Especially when taking into account the apparent drop in life satisfaction during this specific life period, life satisfaction ratings provided by an adolescent age group would expand the validity of our results.

A third limitation is that the current study did not account for potentially moderating factors such as major life events, psychopathology, and cultural context. At least some life events can have a striking impact on the individual and might also affect past, present, and future perceptions of life satisfaction across the life span. In a similar vein, people with psychopathological problems (such as depressive symptoms) or from different cultural contexts may construe their life satisfaction in a different way. Taking these moderating factors into account would be an asset for future studies investigating how people construe their past and future lives.

To conclude, our study extends the rather narrow perceptions of past and future life satisfaction in previous research (e.g., Lachman et al., 2008; Lang et al., 2013; Röcke & Lachman, 2008; Staudinger et al., 2003) by significantly broadening the view on perceptions of past and future life satisfaction spanning the entire life span. In addition, the current study examined whether and if so how the Big Five personality traits affect level and change of perceived life satisfaction trajectories. Results suggest that life satisfaction increased from the past to the present and decreased into the future, and that these trajectories were not affected by personality traits. We thus conclude that humans have an adaptive capacity to perceive the present life as being the best possible, regardless of age and personality. Hence, we think that previous findings from cross-sectional and longitudinal studies on subjective well-being could benefit from taking humans' adaptive capacity into account.

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Footnote

[1] Paired *t*-tests were conducted to examine whether there are mean-level differences in life satisfaction ratings at age 25 and 35 for young adults, and at age 65 and 75 for older adults, respectively. These analyses did not reveal significant mean-level differences (t (255) = -1.46, p = .15 and t (265) = -0.77, p = .44 for young and older adults, respectively).

Figure Captions

Figure 1. Average perceived trajectories of past, present, and future life satisfaction ratings from childhood to old age for young, middle-aged, and older adults. Across the life span, the average life satisfaction scores were above the neutral point of the response scale, which ranged from 1 (*completely dissatisfied*) to 11 (*completely satisfied*).

Figure 2. Model-implied average perceived trajectories of past, present, and future life satisfaction ratings from adolescence to old age for young, middle-aged, and older adults. Across the life span, the predicted life satisfaction scores were above the neutral point of the response scale, which ranged from 1 (*completely dissatisfied*) to 11 (*completely satisfied*).

Table 1

Means and Standard Deviations of Variables

Variable	Young adults *M* (*SD*)	Middle-aged adults *M* (*SD*)	Older adults *M* (*SD*)
Life satisfaction			
Age 5	8.70 (2.33)	7.74 (2.89)	8.62 (2.60)
Age 15	7.26 (2.62)	6.92 (2.90)	8.06 (2.56)
Age 25	8.97 (2.02)	8.86 (2.26)	8.91 (2.24)
Age 35	9.35 (1.33)	8.84 (2.26)	9.18 (2.16)
Age 45	9.15 (1.52)	8.61 (2.56)	9.31 (2.03)
Age 55	9.02 (1.53)	9.21 (1.53)	9.43 (1.91)
Age 65	9.00 (1.62)	9.09 (1.64)	9.60 (1.81)
Age 75	8.66 (1.75)	8.54 (1.84)	9.52 (1.68)
Age 85	8.22 (2.14)	8.11 (2.20)	8.46 (2.00)
Big Five personality traits			
Neuroticism	2.58 (0.56)	2.55 (0.55)	2.41 (0.53)
Extraversion	3.84 (0.58)	3.87 (0.61)	3.76 (0.58)
Openness	3.75 (0.51)	3.75 (0.54)	3.52 (0.53)
Agreeableness	4.07 (0.44)	4.14 (0.42)	4.27 (0.39)
Conscientiousness	3.84 (0.61)	4.07 (0.50)	4.21 (0.45)

Table 2

Simple Correlations Between Current Life Satisfaction and Perceptions of Past and Future Life Satisfaction, Separately for Young, Middle-aged, and Older Adults

	Current life satisfaction		
Perceptions of past and future life satisfaction	Young adults	Middle-aged adults	Older adults
Age 5	.10#	.12#	.16*
Age 15	.19**	.16*	.11#
Age 25	--	.19*	.11#
Age 35	.45**	.26*	.21**
Age 45	.42**	.43**	.18**
Age 55	.38**	--	.29**
Age 65	.30**	.65**	.51**
Age 75	.28**	.46**	--
Age 85	.23**	.30**	.45**

Note. #$p < .10$. *$p < .05$. **$p < .01$.

Table 3

Model Fit of the Intercept-Only, Linear, Quadratic, and Cubic Growth Models

Model	χ^2	*df*	CFI	RMSEA
Intercept only	1464.6	102	.44	.13
Linear growth	963.7	93	.64	.11
Quadratic growth	412.1	81	.86	.07
Cubic growth[a]	270.3	66	.92	.06

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation.

[a] Model selected.

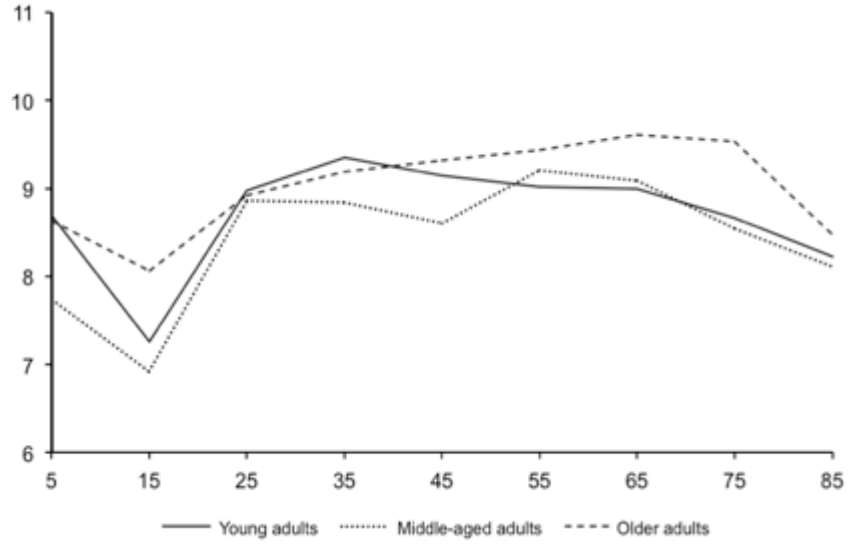
Table 4

Estimates of the Conditional Growth Model

	Growth factors			
Predictor	Intercept	Linear slope	Quadratic slope	Cubic slope
Neuroticism	-0.24**	0.02	-0.11	0.08
Extraversion	0.11*	-0.09	0.11	-0.09
Openness	0.02	0.03	-0.08	0.08
Agreeableness	-0.01	0.01	-0.09	0.05
Conscientiousness	0.02	-0.00	0.04	0.02

Note. Standardized regression coefficients with equality constraints across age groups.

*$p < .05$. **$p < .01$.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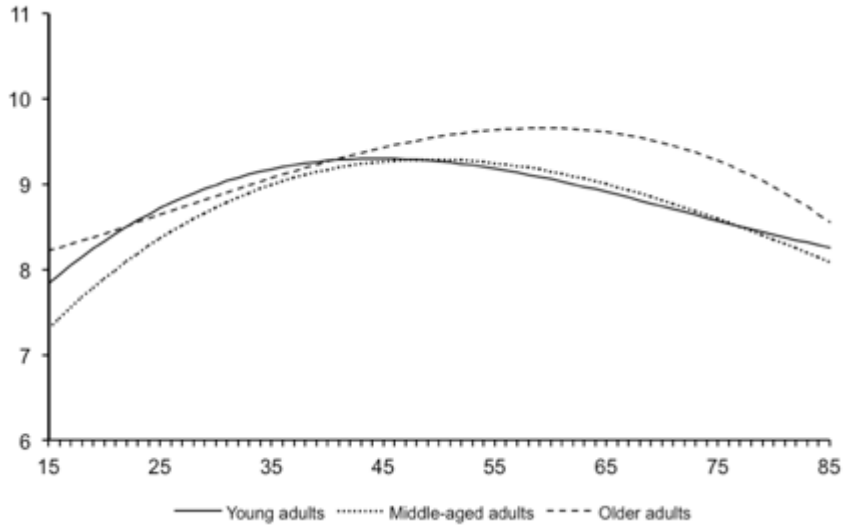
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